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EXAMINER
NGUYEN, TUAN HOANG

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 July 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-2, 4-16, 20-32, and 34-38</u> is/are pending in the application..

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>17-19</u> is/are allowed.

6)☒ Claim(s) <u>1,2,4-16,20-32 and 34-38</u> is/are rejected.

7)☒ Claim(s) <u>3 and 33</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response To Arguments

1.   Applicant's arguments, see applicant's remarks, filed on 07/02/2007, with respect to the rejection(s) of claim(s) 1-38 under 35 U.S.C § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

2.   Applicant's arguments, on page 2 states that "as an initial matter, it should be noted that the Office Action dated March 30, 2007 fails to address claims 30-32". The Examiner disagrees with the Applicant's argument. The Applicant should refer to page 8 of the Office Action, where the Examiner addressed the rejections of claims 30-32.

Information Disclosure Statement

3.   The information disclosure statement (IDS) submitted on 05/29/2007 and 07/12/2007 has been considered by Examiner and made of record in the application file.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-2, 8-11, 15-16, 20, 24, 26-27, 34, and 37-38 are rejected under 35

U.S.C. 103(a) as being unpatentable over Twitchell, Jr. (US PAT. 6,745,027 hereinafter,

"Twitchell") in view of Bender et al. (U.S PAT. 7,058,031 hereinafter, "Bender").

Consider claims 1 and 34, Twitchell teaches for a given node to join an ad hoc

network of a plurality of energy-conserving nodes, comprising: transmitting a wake-up

signal (col. 3 lines 1-12).

Twitchell does not explicitly show that receiving a message from one of the

energy-conserving nodes in the network, the message including information sufficient

for the given node to determine how to join the network; and joining the network using

the information.

In the same field of endeavor, Bender teaches receiving a message from one of

the energy-conserving nodes in the network, the message including information

sufficient for the given node to determine how to join the network (fig. 7 col. 5 line 48

through col. 6 line 11); and joining the network using the information (fig. 7 col. 5 line 48

through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to use, receiving a message from one of the energy-

conserving nodes in the network, the message including information sufficient for the

given node to determine how to join the network; and joining the network using the

information, as taught by Bender, in order to provide detecting an overload condition

and a request for opening a connection for a user for communication of data, selecting

an open connection, releasing the selected open connection, and allocating, to the user,

communication resources corresponding to resources released based on releasing the

selected open connection.

Consider claim 2, Twitchell further teaches the transmitting comprises: powering

on a bellringer transmitter (col. 7 lines 26-30), transmitting a wake-up signal (col. 3 lines

1-12), and powering off the bellringer transmitter (col. 7 lines 7-10).

Consider claim 8, Twitchell further teaches receiving, by the one of the energy-

conserving nodes, the wake-up signal (col. 3 lines 1-12); and transmitting the message,

by the one of the energy-conserving nodes, responsive to receiving the wake-up signal

(col. 11 lines 57-64).

Consider claim 9, Twitchell further teaches waiting a random time interval, by the

one of the energy-conserving nodes, before transmitting the message (col. 9 line 44

through col. 10 line 10).

Consider claim 10, Twitchell further teaches waiting a deterministic time interval, by the one of the energy-conserving nodes, before transmitting the message (col. 9 line 44 through col. 10 line 10).

Consider claim 11, Twitchell further teaches determining, after the one of the energy-conserving nodes receives the wake-up signal, whether the one of the energy conserving nodes is to respond to the wake-up signal (col. 10 lines 29-39), wherein the one of the energy-conserving nodes performs the transmitting of the message only when the one of the energy-conserving nodes determines that the one of the energy-conserving nodes is to respond to the wake-up signal (col. 10 lines 29-39).

Consider claim 15, Twitchell further teaches the determining whether the one of the energy-conserving nodes is to respond is based on one or more certain periods in which the one of the energy-conserving nodes is permitted to respond (col. 9 lines 44-67).

Consider claim 16, Twitchell further teaches the message comprises times when one or more of the energy-conserving nodes are available to receive data and corresponding channels on which the one or more of the energy-conserving nodes are to receive at the times (col. 9 lines 44-67).

Consider claim 20, Twitchell teaches a node configured to operate in an energy-conserving ad hoc network, the node comprising: a transceiver configured to send and receive data messages (col. 3 lines 1-12); a transmitter configured to transmit a wake-up signal (col. 3 lines 1-12); and processing logic configured to control operation of the transceiver and the transmitter (col. 3 lines 1-12), wherein the processing logic is further configured to: transmit the wake-up signal via the transmitter (col. 3 lines 1-12).

Twitchell does not explicitly show that receive a network entry message from one of a plurality of existing nodes in the network, the network entry message including scheduled times in which at least one of the existing nodes in the network is available to receive, and join the network using the scheduled times.

In the same field of endeavor, Bender teaches receive a network entry message from one of a plurality of existing nodes in the network, the network entry message including scheduled times in which at least one of the existing nodes in the network is available to receive (fig. 7 col. 5 line 48 through col. 6 line 11), and join the network using the scheduled times (fig. 7 col. 5 line 48 through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, receive a network entry message from one of a plurality of existing nodes in the network, the network entry message including scheduled times in which at least one of the existing nodes in the network is available to receive, and join the network using the scheduled times, as taught by Bender, in order to provide detecting an overload condition and a request for opening a connection for a user for communication of data, selecting an open connection, releasing the selected

open connection, and allocating, to the user, communication resources corresponding

to resources released based on releasing the selected open connection.

Consider claim 24, Twitchell further teaches a bellringer receiver, wherein the

processing logic is further configured to cause the node to function as an existing

network node after joining the network, when functioning as an existing network node,

the processing logic is further configured to: receive, via the bellringer receiver, a wake

up signal transmitted by another node (col. 3 lines 1-12 and col. 9 line 44 through col.

10 line 10), wait a random time interval (col. 9 line 44 through col. 10 line 10), power on

the transceiver (col. 7 lines 26-30), transmit the network entry message via the

transceiver (col. 3 lines 1-12), and power off the transceiver (col. 10 lines 7-10).

Consider claim 26, Twitchell teaches a machine-readable medium having

instructions recorded thereon for at least one processor of a node, when the instructions

are executed by the at least one processor, the at least one processor is configured to:

transmit a wake-up signal when the node intends to join a network (col. 15 line 56

through col. 16 line 7).

Twitchell does not explicitly show that receiving a network entry message from

an existing node in the network, the message including information Consider availability

of at least one network node for receiving a message from the node, and join the

network based on the information included in the network entry message.

In the same field of endeavor, Bender teaches receiving a network entry

message from an existing node in the network, the message including information

Consider availability of at least one network node for receiving a message from the

node (fig. 7 col. 5 line 48 through col. 6 line 11), and join the network based on the

information included in the network entry message (fig. 7 col. 5 line 48 through col. 6

line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to use, receiving a network entry message from an

existing node in the network, the message including information Consider availability of

at least one network node for receiving a message from the node, and join the network

based on the information included in the network entry message, as taught by Bender,

in order to provide detecting an overload condition and a request for opening a

connection for a user for communication of data, selecting an open connection,

releasing the selected open connection, and allocating, to the user, communication

resources corresponding to resources released based on releasing the selected open

connection.

Consider claim 27, Twitchell further teaches when the instructions are executed

by the at least one processor, the at least one processor is further configured to: turn on

a transmitter before the transmitting of the wake-up signal (col. 7 lines 26-30), and turn

off the transmitter after the transmitting of the wake-up signal (col. 10 lines 7-10).

Consider claim 30, Twitchell teaches a machine-readable medium having instructions recorded thereon for at least one processor of a node, when the instructions are executed by the at least one processor, the at least one processor is configured to: receive a wake-up signal via a bellringer receiver (col. 7 lines 26-30 and col. 16 lines 20-27).

Twitchell does not explicitly show that responsive to the receiving of the wake-up signal, transmit a network entry message including scheduled times in which one or more of existing network nodes are available to receive.

In the same field of endeavor, Bender teaches responsive to the receiving of the wake-up signal, transmit a network entry message including scheduled times in which one or more of existing network nodes are available to receive (fig. 7 col. 5 line 48 through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, responsive to the receiving of the wake-up signal, transmit a network entry message including scheduled times in which one or more of existing network nodes are available to receive, as taught by Bender, in order to provide detecting an overload condition and a request for opening a connection for a user for communication of data, selecting an open connection, releasing the selected open connection, and allocating, to the user, communication resources corresponding to resources released based on releasing the selected open connection.

Consider claim 31, Twitchell further teaches the at least one processor is further configured to: wait a random time interval before transmitting the network entry message (col. 9 line 44 through col. 10 line 10).

Consider claim 32, Twitchell further teaches the at least one processor is further configured to: after receiving the wake-up signal, determine whether to respond to the wake-up signal (col. 7 lines 39-48).

Consider claim 37, Twitchell teaches a node in an ad hoc network, comprising: a memory configured to store one or more time periods during which the node is available to receive (col. 9 line 44 through col. 10 line 10); a processor configured to: transmit a first wake-up signal (col. 3 lines 1-12), receive a message from a neighboring node, the message identifying one or more time periods during which the neighboring node is available to receive (col. 9 line 44 through col. 10 line 10), store the one or more time periods from the message in the memory (col. 5 lines 15-24), receive a second wake-up signal from a different node (col. 12 lines 12-16).

Twitchell does not explicitly show that transmit a message to the different node, the message including at least the one or more time periods during which the node is available to receive.

In the same field of endeavor, Bender teaches transmit a message to the different node, the message including at least the one or more time periods during which the node is available to receive (fig. 7 col. 5 line 48 through col. 6 line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, transmit a message to the different node, the message including at least the one or more time periods during which the node is available to receive, as taught by Bender, in order to provide detecting an overload condition and a request for opening a connection for a user for communication of data, selecting an open connection, releasing the selected open connection, and allocating, to the user, communication resources corresponding to resources released based on releasing the selected open connection.

Consider claim 38, Twitchell further teaches the message transmitted to the different node further includes the one or more time periods during which the neighboring node is available to receive (col. 14 lines 23-42).

6.   Claims 4-6, 12-14, 21-23, 25, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell in view of Bender and further in view of Balachandran et al. (U.S PUB. 2004/0230638 hereinafter, "Balachandran").

Consider claim 4, Twitchell and Bender in combination, fails to teach retransmitting the wake-up signal when a message is not received during a predefined time period.

However, Balachandran teaches retransmitting the wake-up signal when a message is not received during a predefined time period (page 1 [0007]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Balachandran into view of Twitchell and Bender, in order to provide scheduling the awakening of nodes and for adaptively setting sleep periods of nodes in a synchronous multiple node ad-hoc network.

Consider claim 5, Balachandran further teaches setting the time period to a variable value (page 1 [0007]).

Consider claim 6, Balachandran further teaches setting the time period to a fixed value (page 1 [0007]).

Consider claim 12, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is a random decision (page 2 [0022]).

Consider claim 13, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is based on a received signal strength of the wake-up signal (page 2 [0011]).

Consider claim 14, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is based on an understanding of a current network density from a point of view of the one of the energy-conserving nodes (page 3 [0028]).

Consider claim 21, Balachandran further teaches the processing logic is further configured to: turn off the transmitter after transmitting the wake-up signal, and turn on the transceiver (page 1 [0007] and page 2 [0022]).

Consider claim 22, Balachandran further teaches the processing logic is further configured to: wait for reception of the network entry message after transmitting the wake-up signal (page 1 [0007]), and when a time limit is exceeded before receiving the network entry message, turn off the transceiver, wait a duration of a first time interval, turn on the transmitter (page 2 [0022]), and retransmit the wake-up signal (page 1 [0007]).

Consider claim 23, Balachandran further teaches the first time interval is a variable interval and the processing logic is further configured to: increase a length of the first time interval as a number of failed network joining attempts for the node increases (page 2 [0011]).

Consider claim 25, Balachandran further teaches the node functions as an existing node, the processing logic is further configured to: determine whether to respond to the received wake-up signal based on one of a random decision (page 2 [0022]), a received signal strength of the wake-up signal (page 2 [0011]), a current density of the network from a point of view of the node (page 3 [0028]), and one or more

certain time periods during which the node is configured to respond to the received

wake-up signal (page 2 [0011]).

Consider claim 35, Balachandran further teaches the receiving comprises:

waiting a duration of a first time interval when the network entry message is not

received after a predetermined time limit (page 1 [0007]).

7.   Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Twitchell in view of Bender and further in view of Bahl et al. (U.S PUB.

2004/0218580 hereinafter, "Bahl").

Consider claim 28, Twitchell and Bender in combination, fails to teach at least

one processor is further configured to: when the receiving of the entry message fails to

occur during a predetermined time limit: wait for a duration of a first time interval, and

transmit the wake-up signal.

However, Bahl teaches at least one processor is further configured to: when the

receiving of the entry message fails to occur during a predetermined time limit: wait for a

duration of a first time interval (page 6 [0050]), and transmit the wake-up signal (page 6

[0052]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention

was made to incorporate the disclosing of Bahl into view of Twitchell and Bender, in

order to provide a system and method for devices to concurrently connect to multiple

networks and be synchronized during the time in which the devices stay in an ad hoc
network.

Consider claim 29, Bahl further teaches the first time interval is a variable time
interval and the at least one processor is further configured to:
set the first time interval to a relatively small value (page 6 [0050]), and increase the
value of the first time interval as a number of failed network joining attempts increases
(page 6 [0052]).

8.   Claims 7 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over
Twitchell in view of Bender and Balachandran, and further in view of Bahl et al. (U.S
PUB. 2004/0218580 hereinafter, "Bahl").

Consider claim 7, Twitchell, Bender, and Balachandran in combination, fails to
teaches setting the time period to a relatively small value, and increasing a value of the
time period as a number of failed network joining attempts increases.

However, Bahl teaches setting the time period to a relatively small value (page 6
[0050]), and increasing a value of the time period as a number of failed network joining
attempts increases (page 6 [0052]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention
was made to incorporate the disclosing of Bahl into view of Twitchell, Bender, and
Balachandran, in order to provide a system and method for devices to concurrently

connect to multiple networks and be synchronized during the time in which the devices

stay in an ad hoc network.

Consider claim 36, Bahl further teaches for waiting a duration of a first time

interval comprises: means for setting the first time interval (page 6 [0050]), and means

for increasing the first time interval as a number of failed network joining attempts

increases for the node (page 6 [0052]).

Allowable Subject Matter

9.   The applicant's remarks, filed on 07/02/2007, have been carefully reviewed with

updated search. Consequently, reasons for allowance of claims 17-19 are set forth in

according to the applicant's remarks state on pages 6-7.

10.   Claims 3 and 33 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

Conclusion

11.   Any response to this action should be mailed to:

      Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

Hand-delivered responses should be brought to:

Customer Service Window

Randolph Building

401 Dulany Street

Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571)272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571)272-7882882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information Consider the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Nguyen
Examiner
Art Unit 2618

NAY MAUNG
SUPERVISORY PATENT EXAMINER